REMARKS

Support for the language added to Claim 24 in respect to the irradiated thickness is found in page 5, line 14, and in respect to the recited provisos, in page 8, lines 10 et seq. and in page 4, line 23.

Claims 23 and 24 stand rejected under 35 U.S.C. 112 second paragraph alleged to be indefinite. In its amended form Claim 24 is believed to address and overcome the stated rejection.

The present invention relates to a holographic volume storage medium with an irradiated thickness that is greater than 1 mm and up to 5 cm. The inventive medium enables numerous holograms to be positioned on the same horizontal level and numerous such levels (see the specification in page 2, lines 9-17).

Claims 23 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bieringer et al '846 (Bieringer), in view of Savant et al '221 (Savant), Kawano et al. '890 (Kawano) and Colvin et al '648 (Colvin).

Bieringer disclosed an optically isotropic **two dimensional** structure (see column 2, lines 25-26). Nothing in Bieringer describes recording of at least three holograms at one specimen position nor is there disclosed a recording material for a holographic **volume** storage medium having an irradiated thickness that is "greater than 1 mm and up to 5 cm". It will be noted that no thickness greater than 1 mm is disclosed by Bieringer.

The art-skilled is well aware of that multiplex processes used for holographic data storage are only possible with media having a greater thickness.

Savant disclosed a birefringent azo dye polymer erasable optical storage medium. The referenced medium is characterized in that previously stored information is erased and is directly overwritten (see column 7, lines 11-15). Importantly, Savant's optical storage medium is coated on a substrate so as to form a film having a thickness of up to 1000 micron (column 18, line 58). There is nothing in Savant to add to Bieringer in a presently meaningful manner. Moreover, Savant's process – see column 7, lines 8-18 – for storing data, a multilevel recording, does

not describe the multiplexing process that characterizes the presently claimed process.

Kawano that disclosed an optical storage medium refers to polarization holograms (column 5, lines 58-65) that differ from the present holograms that are recorded by light intensity modulation (page 22, line 26 et seq.) Further, in accordance with Kawano (column 6, lines 49-56) new data is overwritten as polarization hologram without erasing the previously stored data by an erasing process. This means that a previously stored hologram is erased by a subsequent hologram stored on the medium. This contrasts with the present invention where at least three holograms at one specimen position are enabled. Nothing in Kawano adds to Bieringer in a manner describing the presently claimed invention.

Colvin disclosed a polymer matrix with actinic properties contributed by diffusing **monomeric species** in the presence of photoinitiator. The composition of the referenced recording medium is an oligomer-monomer mixture (column 4, lines 11-16) that does not describe the polymeric recording material based on dye monomers conforming to the presently recited formula (II). There is nothing in the Colvin document that may augment Bieringer's disclosure in a manner describing the presently claimed invention.

Reconsideration of the rejection alleging obviousness over Bieringer in view of Savant, Kawano and Colvin and its withdrawal in light of the above are requested.

Claims 23 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bieringer, in view of Savant, Kawano and Colvin and further in view of Ross '663 (Ross).

Bieringer, Savant, Kawano and Colvin have been discussed above and their shortcomings in the present context were noted.

Ross disclosed an organic volume phase holographic recording media that includes an alpha di-ketone.

The Examiner cites Ross as evidence that thickness of 1 mm to 5 cm is known. Applicants submit that increasing the thickness does not necessarily result in suitable volume storage medium.

As thickness increases the diffraction efficiency increases too, yet increasing

As thickness increases the diffraction efficiency increases too, yet increasing the thickness results in increase in absorption of light used for storing and reading information. Hence, there is a need to select specific groupings for use in the polymer storage material. By increasing the thickness of the storage medium, the selected monomers need to allow an increase in storing capacity, and at the same time avoid significant reduction of the light intensity by absorption. That is to say that increasing the thickness of a given storage medium alone does not lead to a suitable volume storage medium.

Since Ross disclosed a completely different type of storage medium, there is no reasonable basis for the art-skilled to conclude that an increase in thickness of a different type of storage medium will result in a suitable volume storage medium.

Applicants submit that the cited documents do not combine to describe the presently claimed invention and request that the patentability of the claims be reconsidered and their rejection retracted.

Believing the above represent a complete response to the Office Action and that the application is in condition for allowance, Applicants request the earliest issuance of an indication to this effect.

Respectfully submitted,

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